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DRIZORO®
Construction Products

DRIZORO Construction Products

MAXSEAL® SUPER

CE

CEMENT- BASED WATERPROOF COATING WITH CRYSTALLISATION AND OSMOTIC PROPERTIES

DESCRIPTION

MAXSEAL®* *SUPER is a special waterproofing coating made of a mixture of cements, carefully controlled aggregates and special organic and inorganic additives. Its special formula improves the osmotic effect of the application allowing the penetration in the concrete through its capillary system. The product crystallises inside sealing, waterproofing and protecting the concrete structure. It has been designed to be applied on fresh or cured concrete, pre-cast concrete, concrete blocks, cement plasters but also suitable on bricks and masonry.

APPLICATION FIELDS

- Waterproofing and coating drinking water tanks.
- As a waterproof coating for exterior and walls.
- Basements and below-grade structures subjected to positive or negative water pressure.
- Waterproofing and protection of concrete foundations, retaining walls and foundation slabs.

- As a waterproof coating for concrete blocks and prefabricated panels.
- As a decorative, waterproof finish for silos and cooling towers in thermal plants.
- Repairing and waterproofing irrigation channels.
- As a coating to waterproof dams and retaining walls.
- To protect and waterproof concrete in water treatment plants.
- Waterproofing tunnels and shafts.
- Waterproofing swimming pools.

ADVANTAGES

- Suitable for use in contact with drinking water.
- The penetration inside concrete provides internal sealing and protective effect. It seals cracks up to 0,4 mm.
- 100% waterproof coating, even in permanent immersion applications subjected to high pressures.
- For indoor applications, especially basements, the coating resists negative hydrostatic pressure from groundwater.
- Can be applied on dampened surfaces, being easy to use free of future maintenance costs.
- Resists the corrosive effects of salt water and atmospheric pollution.
- Longer lasting than paints and other coatings.
- Once it sets, can be painted over. It can also be covered with ceramic tiles as in swimming pools or decorative outdoor murals.
- Allows the substrate the water vapour diffusion.

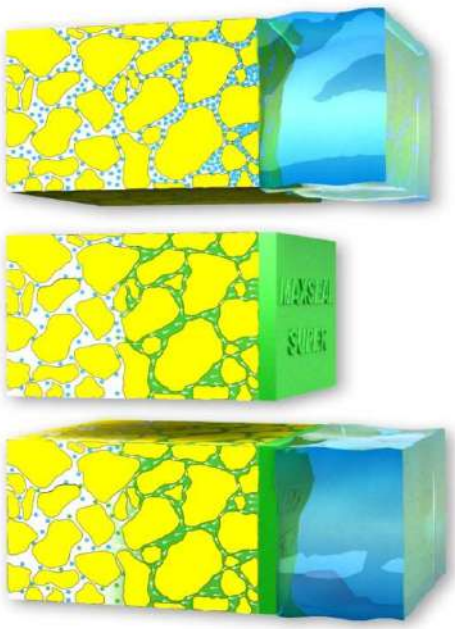
APPLICATION INSTRUCTIONS

Surface preparation
The surface to be coated must be solid and clean, free of all traces of paints, coatings, efflorescence, loose particles, grease, oil, demoulding agents, dust, gypsum plaster, etc. Remove by water pressure cleaning, sand blasting or other suitable mechanical method.

All cracks must be at least 1,5 cm deep and must be sealed with ***MAXREST***® if there is no water or with ***MAXPLUG***® if there is water penetration. All non-structural surface iron must be cut to a depth of 2 cm and then patched with ***MAXREST***® or ***MAXPLUG***®.

Wash and saturate the surface with water before applying the coating but check that there are no puddles or free-standing water remaining.

Application by brush, broom or spray
Mix just with water between 6 and 7 litres per each 25 kg bag, either manually or preferably by slow



speed drill (400 – 600 rpm). Applications made at high temperature or sprayed, the water ratio can be increased slightly.

For standard applications, ***MAXSEAL***® ***SUPER*** can be applied with a fibre type brush or broom such as our ***MAXBRUSH***® or ***MAXBROOM***®. Apply a thick layer to form a continuous and uniform coating; do not spread as if it were paint, apply only in one direction, the second coat should be spread in cross direction. Consumption is between 1 and 1,5 kg/ m^2 per coat, for a total consumption of about 2 – 2,5 kg/ m^2. Waiting time between coats is from 6 – 8 hours minimum to 24 hours maximum.

It can be also sprayed by means of a shotcreeting equipment. For applications made by spray which will be later subjected to water pressure, and in order to ensure a complete coverage of the surface, it is recommended to slide the broom over the material which has just been sprayed.

Application by dusting and power trowel
For this case, the application is performed on the fresh concrete, after levelling, and has enough strength to be walked over, but still fresh enough to dampen the surface when trowelled. The product is spread in powder form as supplied at a ratio of 1,5 to 2,5 kg/ m^2, endeavouring to achieve a complete and uniform coverage. Immediately after the surface is hosed down to prevent the superficial drying of the slab and to make the power trowelling smoother. The trowelling will provide a monolithic waterproof layer, which can be slightly dampened during this operation to improve the penetration and to prevent an excessively quick drying, which would prevent the proper hydration of ***MAXSEAL***®

SUPER. Singular spots such as columns, penetrating pipes, corners, concrete joints, and expansion joints should be treated and sealed accordingly.

MAXSEAL® SUPER can also be dusted on the lean concrete and the steel reinforcements. This procedure will not only protect the reinforcement itself but will prevent the rising dampness into the foundation slab.

The lean concrete should be dampened until saturation and ***MAXSEAL® SUPER*** will be dusted using between 1,5 to 2,5 kg/ m^2. The concrete of the foundation slab can be poured after one hour, once ***MAXSEAL®* SUPER** has hardened and adhered to the lean concrete, endeavouring not to damage the previous application.

Application conditions
Optimum application temperature is 10º - 30ºC. For summer or hot temperatures (>30 ºC), wet surface plenty of water**.** You can water surface even after ***MAXSEAL® SUPER*** has been applied if it is noticed that the drying process is too fast.

Do not apply when temperature is below 5ºC or if such temperatures are expected within 24 hours after application. Do not apply on frozen or frosted surfaces. Do not apply if rain is expected within 24 hours after application.

Cleaning
Tools and equipment must be cleaned with water immediately after use. Once ***MAXSEAL® SUPER*** hardens, only product can be removed by mechanical methods.

CONSUMPTION

Estimated consumption applied by brush, broom or spray is between 1 and 1,5 kg/ m^2 per coat, for a total consumption of about 2 – 2,5 kg/m^2 in two coats. Porous surfaces, substrate conditions and application method can vary this estimated consumption.

Applied by dusting on fresh concrete, estimated consumption of ***MAXSEAL® SUPER*** is about 1,5 – 2,5 kg/ m^2. Congested reinforced slabs can increase consumption up to 20 - 25 %.

A preliminary test on-site will determine consumption exactly.

IMPORTANT INDICATIONS

- Do not use ***MAXSEAL® SUPER*** in contact with very soft water, acid water and/or carbonic water. If sulfates are present, i.e. groundwater, seawater or wastewater, use the version ***MAXSEAL® SUPER ANTISULFAT***.
- In case of doubt related to the kind of water to be in contact with ***MAXSEAL® SUPER***, or further information, consult the Technical Department.

PACKAGING AND COLORS

MAXSEAL® SUPER is supplied in 25 kg bags and drums. It is available in grey and white colour.

STORAGE

Twelve months in bags and eighteen months in drums respectively, in its original unopened packaging. Store in a dry covered place protected from damp, frost and direct sunlight, with temperatures above 5 ºC.

SAFETY AND HEALTH

MAXSEAL® SUPER is an abrasive compound, so protective rubber gloves and safety goggles must be used to prepare the mixture and apply it. In case of skin contact, wash affected areas with water and soap. In case of eye contact, rinse thoroughly with clean water, but do not rub. If irritation persists, seek medical attention.

For further information, Safety Data Sheet of ***MAXSEAL® SUPER*** is available by request.

Disposal of the product and its empty packaging must be done by and according to official regulations.

TECHNICAL DATA

Product characteristics	
CE Marking, EN 1504-2 Description. Mortar for protection of concrete. Coating (C). Principles / Methods. Protection against ingress with coating (Principle 1-PI / 1.3), Moisture control with coating (Principle 2-MC / 2.2) and Increasing resistivity by limiting moisture content with coating (Principle 8-IR / 8.1)	
General appearance and colour	White/Grey powder
Maximum aggregate size, (mm)	0,63
Density for powder, (g/cm^3)	1,15 ± 0,10
Mixing water, (%, by weight)	24-28
Density for fresh mortar, (g/cm^3)	1,85 ± 0,10
Application and curing conditions	
Minimum application temperature for substrate and ambient, (ºC)	> 5
Pot life at 20 ºC & 50 % R.H., (min)	30 – 40
Minimum / Maximum waiting time between coats at 20 ºC & 50 % R.H., (h)	6 – 8 / 12 – 16
Drying time at 20 ºC & 50 % R.H., (h)	4 – 6
Curing time at 20 ºC & 50 % R.H., (d) - Mechanical load: covering with gravel, renders, plasters or tiles - Permanent immersion	 3 7
Cured product characteristics	
Density for cured mortar, (g/cm^3)	1,75 ± 0,10
Depth of penetration of water under direct pressure, EN 12390-8 (kPa)	850
Depth of penetration of water under indirect pressure, EN 12390-8 (kPa)	250
Permeability to water vapour, EN ISO 7783-1/-2. Classification V (g/m^2·day) / S_D (m)	Class I: Permeable to water vapour 340,22 / 0,06
Permeability to water and capillary absorption, EN 1062-3. w (kg/m^2·h^{0,5})	0,03
Compressive strength at 28 days, EN 13892-2 (MPa)	> 40,7
Flexural strength at 28 days, EN 13892-2 (MPa)	> 8,0
Adhesion on concrete at 28 days, EN 1542 (MPa)	1,61
Suitability for contact with potable water, BS 6920	Suitable
Consumption*	
Consumption by dusting method, (kg/m^2) Consumption per coat/total application, (kg/m^2)	1,5 – 2,5 1,0 - 1,5 / 2,0 - 3,0

* These figures are for guidance only and may vary depending on porosity, texture and conditions for substrate, and application method. Perform a preliminary test on-site to ascertain the total consumption exactly under jobsite conditions

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BUREAU VERITAS Certification
BUREAU VERITAS 1828
Nº ES021542/ES021543

DRIZORO® Construction Products

MAXPLUG®

QUICK-SETTING HYDRAULIC MORTAR FOR STOPPING LEAKS UNDER PRESSURE

DESCRIPTION

MAXPLUG® is a quick-setting cement-based mortar that instantly stops running water from cracks, fissures, holes or other openings in concrete and masonry. It is non-shrink and sets within three to five minutes depending on the temperature. Once ***MAXPLUG***® sets, it adheres perfectly to the substrate. It only requires water for mixing.

APPLICATION FIELDS

- Sealing of leaks in concrete surfaces, solid masonry and other sound substrates wherein water flows through cracks and holes.
- Emergency repairs on concrete water pipes. For broken concrete pipes, ***MAXPLUG***® will even work when the concrete pipes are under hydrostatic pressure.
- Emergency plugging of gas leaks.
- Sealing of concave corners and working joints, filling the grooves with ***MAXPLUG***® in the shape of a cove.
- Anchoring of bolts and other accessories that require immediate use.
- Stopping running water in basements, tunnels, foundations and sewers under hydrostatic pressure.
- It is a suitable maintenance material for homes and industry.

ADVANTAGES

- Does not shrink or become weak due to its exothermic reaction.
- ***MAXPLUG***® increases in volume, giving a permanent seal in areas where there is flowing water.
- Its quick setting-time from 3 to 5 minutes can be controlled, either sped up or slowed down, by adding warm or cold water. Setting may even be instantaneous by adding hot water during warm weather.
- Its mechanical properties are similar or higher than concrete.
- Non-toxic. It can be used in contact with drinking water.
- It sets even underwater.
- Does not contain chlorides or other corrosive compounds.
- Easy to use.

APPLICATION INSTRUCTIONS

Surface Preparation

Cracks or fissures must be opened to a minimum depth of 4 cm and a width from 3 to 4 cm. In order to provide a good mechanical key, make a square-shaped groove; preferably dovetail to the surface to which the material is applied. Avoid a "V" shape, as shown in drawings.

WRONG RIGHT OPTIMUM

Clean the surface until it is free of any loose or unsound materials or surface contaminants. If there is no water present at the time of application, dampen the surface before applying ***MAXPLUG***®.

Mixing

Mix only the amounts of ***MAXPLUG***® that it can be applied within 3 minutes under

normal conditions. If flowing water is present, only the amount of material that can be applied by hand should be mixed.

In order to mix the mortar, use a plastic container, fill it with the necessary amount of ***MAXPLUG®***, and add clean water slowly. Mix all components slowly with a trowel until the consistency of cement mortar is achieved. Depending on weather conditions, one kg of ***MAXPLUG®*** requires about 0,28 l of water.

Application

Sealing leaks in cracks or joints. Prepare the surface removing the loose or unsound concrete from the crack or joint and cutting to a depth of 5 cm. ***MAXPLUG®*** should be applied in small amounts that can be applied by hand. Do not pour the material in place; always apply by hand.

Once ***MAXPLUG®*** is mixed, form the mixture into the shape of a plug and hold it in your hand until it becomes warm and then, press ***MAXPLUG®*** firmly into the crack or joint but do not twist or overwork. Maintain pressure with the hand until it sets and finally remove any excess material with a trowel.

In large openings with high pressure such as tunnels and basements, begin the application at the top of the crack, where water pressure is lower, and proceed with the surrounding area until the crack is finished, allowing ***MAXPLUG®*** to harden enough between the successive applications.

Sealing joints between concrete slab and wall. This is a common situation in basements, elevator shafts, swimming pools and reservoirs. Along the concave corners at least a 2 x 3 cm groove must be opened and filled with ***MAXPLUG®*** in the shape of a waterproofing cove.

Expansion joints. In order to stop running water from these joints, perform a groove along the joint and refill it with ***MAXPLUG®*** to stop the leakages. After ***MAXPLUG®*** hardens, cut and define the new joint, sealing then with a flexible material such as ***MAXFLEX®*** type sealants.

Anchoring**.** To anchor steel bolts and other metal fixtures, ***MAXPLUG®*** is suitable.

Application Conditions

The optimum setting time corresponds with a temperature range from 18º to 20º C.

MAXPLUG® will set in about 3 to 5 min, depending on water and ambient temperature and relative humidity.

- **Hot weather application**. At high temperatures (>30 ºC) or where is exposed to winds, ***MAXPLUG®*** will set very quickly. In order to slow down the setting time, cold water may be used. This procedure allows apply the material within 30 - 60 s after mixing. In extreme cases, product should be kept in the shade and ice should be added to the mixing water in order to slow down the setting time.

- **Cold weather application.** In order to shorten the setting time, warm or hot water may be used.

Cleaning

Before ***MAXPLUG®*** sets, all tools and equipment should be cleaned immediately with water. Once it hardens, product can only be removed by mechanical means.

CONSUMPTION

One kg of ***MAXPLUG®*** fills about 0,615-0,620 l, depending on the amount of mixing water (approximately 1,62 kg/ l).

PACKAGING

MAXPLUG® is supplied in 25 kg drums and 5 kg cans.

STORAGE

Twelve months in its original unopened packaging. It should be stored in a dry, fresh and covered place protected from humidity, sunlight and frost, at temperatures above 5 ºC.

IMPORTANT INDICATIONS

- Always use clean and dry tools to take ***MAXPLUG®*** from the packaging.
- Do not mix the product with other materials or hardened product as the mixture characteristics may be modified.

- For further information, consult our Technical Department.

SAFETY AND HEALTH

MAXPLUG® is non-toxic but it is an abrasive product, so protective rubber gloves and safety goggles must be used to prepare and apply it. In case of eye contact, rinse thoroughly with clean water but do not rub. In case of skin contact, wash affected areas with soap and water. If irritation continues, seek medical attention.

For further information, Safety Data Sheet of ***MAXPLUG***® is available by request.

Disposal of the product and its empty packaging must be made by the final user and according to official regulations.

TECHNICAL DATA

Product characteristics		
General appearance and colour	Grey powder	
Maximum aggregate size, (mm)	<0,8	
Mixing water, (%, by weight)	28	
Application and curing conditions		
Minimum application temperature for substrate and ambient, (ºC)	>5	
Final setting time at 20 ºC & 50 % R.H., (min)	3 – 5	
Curing time for coating at 20 ºC & 50 % R.H., (h)	24 - 48	
Cured product characteristics		
Mechanical strengths, (MPa)	Flexural	Compressive
- 30 minutes	1,2	3,8
- 3 days	3,7	22,5
- 7 days	5,7	36,2
- 28 days	5,2	40,7
Consumption*		
Consumption per application, (kg/l)	1,62	

* These figures are for guidance only and may vary depending on conditions for substrate, and application method. Perform a preliminary test on-site to ascertain the total consumption exactly under jobsite conditions.

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ISO 9001
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nº 6003176 / 6003176-MA

DRIZORO Construction Products

MAXSEAL® FLEX-M

CE

ONE-COMPONENT FLEXIBLE WATERPROOF COATING AGAINST POSITIVE AND NEGATIVE PRESSURE FOR CONCRETE AND MASONRY

DESCRIPTION

MAXSEAL®* *FLEX-M is a one-component cement-based mortar. Once mixed only with water, it provides a high-performance flexible coating, for waterproofing and protection of concrete against positive and negative pressure.

APPLICATION FIELDS

- Waterproofing and protection of water retaining structures, such as potable water tanks, reservoirs, dams, water channels, fountains and swimming pools.
- Waterproofing of below-grade structures like basements, retaining walls, foundations, tunnels, galleries subject to high negative water pressure.
- Waterproofing and protection of concrete in waste water treatment plants, settlement tanks, etc.
- Waterproofing and protection of concrete structures against carbonation, freeze-thaw cycles, de-icing salts and marine environment, such as civil works, bridges, architectural buildings, residential facades, etc.
- Waterproofing and protection of concrete against soil salts and aggressive ground water, in underground jobs, foundations, etc.
- Waterproofing of roofs, terraces, balconies, etc.
- Waterproofing of window boxes, gardens and other surfaces subject to root penetration.
- Internal waterproofing of bathrooms, kitchens and other wet areas in hotels, hospitals, offices, residential buildings, etc.

ADVANTAGES

- Provides a fully-flexible coating which ensures complete waterproofing even in the most severe conditions, as high negative water pressure.
- Good crack-bridging capability of the concrete (> 0,5 mm).
- Acts as an anti-fracture membrane between the substrate and other finishing coats if applied.
- Excellent barrier effect against CO_2 and chlorine (Cl-), thereby prevents carbonation and corrosion of steel rebars.
- Allows water vapour diffusion and the breathability of the concrete.
- Resistant to abrasion and UV rays.
- Withstands atmospheric pollution, corrosive effects of salt water or de-icing salts, and the freeze/thaw cycles.
- Excellent adhesion. Do not require primer and can be applied on wet surfaces.
- Non-toxic, suitable for contact with potable water.
- Longer lasting that other coatings, avoiding maintenance costs.
- Environmentally friendly and suitable for application in poor ventilation areas.
- Withstands the root penetration.

APPLICATION INSTRUCTION

Surface preparation

The surface to be coated must be sound, clean, and free of all traces of paint, dust, grease, efflorescence, loose particles, gypsum, plaster and mould release compounds. Recommended cleaning methods are high pressure water cleaning and sandblasting. Other percussive methods are not recommended.

Holes, voids, honeycombs and cracks, once opened to a minimum 2 cm in depth, should be repair with structural repair mortar ***MAXREST®*** Exposed steel bars must be cleaned and patched with ***MAXREST®*** (Technical Bulletin no. 4) with 1 cm. minimum thickness. If steel bar is corroded, treat with the oxide converter ***MAXREST®*** ***PASSIVE*** (Technical Bulletin no. 12).

Thoroughly wash down and saturate plenty of water the surface, but do not leave free standing water before application.

Mixing
A 22 kg bag of ***MAXSEAL® FLEX-M*** requires from 4,4 – 5,3 litres of water (22 ± 2 %), depending on application temperature and substrate conditions. Pour the required amount of water in a clean container and then slowly add ***MAXSEAL® FLEX-M***, mixing by a slow speed electric drill (400-600 rpm) fitted with a disc mixer for about 2-3 minutes until achieving a lump-free and homogeneous. Allow the mixture to rest for 2 to 3 minutes to fully wet out all the powder, and then remix briefly before applying.
To keep the workability of the fresh mortar, remix again briefly, but do not add more water. Do not mix product that can not be applied within 20 – 30 minutes.

Application
Apply ***MAXSEAL® FLEX-M*** by a fibre type brush ***MAXBRUSH®*** or broom ***MAXBROOM®***, spreading a homogeneous and continuous coating of 1 mm approximately. Once applied, do not overwork the surface and do not apply as if it was paint.

Apply two coats in perpendicular direction, with 1 – 1,5 kg/m^2 per coat, for a total consumption of 2 – 3 kg/m^2. Allow a drying time of minimum 6 hours and maximum of 24 hours between coats. Second coat can be applied by roller for a textured finish.

For large areas ***MAXSEAL® FLEX-M*** can also be sprayed, being the recommended nozzle size 3-4 mm and spraying pressure between 3,5 and 5,0 bar. When sprayed, it is recommended to comb the fresh coat with a broom to make sure that the whole surface is covered homogeneously.

On fissures, concrete joints, corners and cracks, once repaired and sealed, apply a first coat of ***MAXSEAL® FLEX-M*** with 1,5 kg/m2 and while it is still fresh, place a fibre glass mesh ***DRIZORO MESH-58*** with at least 20 cm wide of strip. Then apply a second coat of ***MAXSEAL® FLEX-M*** with 1,5 kg/m2.

Application conditions
Do not apply below 5 ºC or if lower temperatures are expected within 24 hours after application. Do not apply on frozen surfaces or if rain is expected 24 hours after application.
Avoid a quick drying by strong wind and/or hot temperatures, keeping its moisture curing at least the first 24 hours, by protecting with wet burlaps and plastic sheets.

Curing
Curing time for putting into service and water immersion is 5 days, at 20ºC and 50% R.H. Applications at lower temperatures or higher R.H. will increase curing time.

Once ***MAXSEAL® FLEX-M*** is cured, wash surface with water pressure before water immersion service,

Cleaning
All tools must be cleaned with water after use. Once it cures can only be removed by mechanical methods.

CONSUMPTION

MAXSEAL® FLEX-M is applied in two coats of 1 – 1,5 kg/m^2 per coat, for a total consumption of 2 – 3 kg/m^2 in two coats. These figures may vary depending on porosity, substrate conditions and application method, a preliminary test on-site will determine consumption exactly.

PACKAGING

MAXSEAL® FLEX-M is supplied in 22 kg bags, available in grey and white colours.

STORAGE

Twelve months in its original unopened packaging, in a dry and covered place protected from humidity, frost and direct sunlight, at temperatures above 5 ºC.

IMPORTANT INDICATIONS

- Do not add cement, admixtures, sand or any other compound.
- In case of doubt related to the kind of water to be in contact with ***MAXSEAL® FLEX-M*** or other uses not specified on this Technical Bulletin, consult Technical Department.

SAFETY AND HEALTH

MAXSEAL® FLEX-M is an abrasive compound so protective rubber gloves and goggles must be used during application. In case of eye contact, rinse thoroughly with clean water, but do not rub. In case of skin contact, wash affected areas with soap and water. If irritation continues, seek medical attention.

Safety Data Sheet of ***MAXSEAL® FLEX-M*** is available by request.

Disposal of the product and its empty packaging must be made by the final user and according to official regulations.

MAXSEAL® FLEX-M

TECHNICAL DATA

Product characteristics	
CE Marking, EN 1504-2 Description. Mortar for protection of concrete. Coating (C). Principles / Methods. Protection against ingress with coating (Principle 1-PI / 1.3), Moisture control with coating (Principle 2-MC / 2.2) and Increasing resistivity by limiting moisture content with coating (Principle 8-IR / 8.2)	
General appearance and colour	White or grey powder
Density, (g/cm^3)	1,12 ± 0,1
Mixing water, (%)	20-24
Application and curing conditions	
Minimum application temperature for substrate and ambient, (ºC)	> 5
Pot life at 20 ºC & 50 % R.H., (min)	20 - 30
Minimum / Maximum drying-time between coats at 20 ºC & 50 % R.H., (h)	6 / 24
Curing time at 20 ºC & 50 % R.H.(d)r: - Mechanical load: covering with gravel, renders, plasters, tiles - Water immersion	 3 5
Cured product characteristics	
Waterproofing maximum positive/direct water pressure, EN 12390-8 (ATM)	11
Waterproofing maximum negative/indirect water pressure, EN 12390-8 (ATM)	5
Permeability to water vapour, EN ISO 7783-1/-2. Classification V (g/m^2·day) / S_D (m)	Class I: Permeable to water vapour 13,7 / 1,6
Permeability to water and capillary absorption, EN 1062-3. w (kg/m^2·h^{0,5})	0,005
Permeability to CO_2, EN 1062-6. S_D (m)	64
Crack-bridging capability, UNE-EN 1062-7	Class A3 (>0,5 mm)
Adhesion on concrete at 28 days, EN 1542 (MPa)	3,4
Suitability for contact with potable water	Suitable
Consumption*	
Consumption per coat/total application, (kg/m^2)	1 - 1,5 / 2 - 3

* These figures are for guidance only and may vary depending on porosity, substrate conditions and application method. Perform a preliminary test on-site to ascertain the total consumption exactly under jobsite conditions

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